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**Open-ended Working Group of the Parties to
the Montreal Protocol on Substances that
Deplete the Ozone Layer**

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Item 7 of the provisional agenda*

**Key issues for discussion towards a possible
hydrofluorocarbon management policy and
legal framework under the Montreal Protocol**

**Proposed amendment to the Montreal Protocol submitted by
India**

Note by the Secretariat

Pursuant to article 9, paragraph 2, of the Vienna Convention for the Protection of the Ozone Layer, the Secretariat is circulating a proposal submitted by India to amend the Montreal Protocol in respect of hydrofluorocarbon phase-down (see annex). The proposal is being circulated as received and has not been formally edited by the Secretariat.

* UNEP/OzL.Pro.WG.1/35/L.

Annex

Indian Proposal for Amendment for Phase-down of Hydrofluorocarbons (HFCs)

1. Background:

HFCs have been widely used chemicals as substitute to Ozone Depleting Substances (ODSs). HFCs being non-ODSs are not controlled so far under the Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer. However, emissions of HFCs are controlled along with other six Green House Gases (GHGs) under the United Nations Framework Convention for Climate Change (UNFCCC) and its Kyoto Protocol. Considering HFCs are high-Global Warming Potential (GWP) chemicals, there is a growing global concern with the increased use of HFCs. It is proposed to phase-down production and consumption of HFCs using expertise and institutions of the Montreal Protocol and continue to include HFCs within the scope of the UNFCCC and its Kyoto Protocol for accounting and reporting of emissions.

The amendment proposal for phase-down of HFCs takes into account challenges in phase-out of Hydrochlorofluorocarbons (HCFCs) in Article 5 Parties by incorporating flexibilities in terms of choice of alternative technologies and timeframe for transitioning from HFCs to safe, technically proven, energy-efficient, economically viable, environment friendly, commercially available low-GWP/zero-GWP technologies.

2. Key Elements of the Indian Proposal

1. There are 19 HFCs with varying GWP from 4 to 12,400.
2. Emissions of HFC-23 and its by-production during production of HCFC-22 to be addressed on priority because of its high-GWP. Comprehensive Research and Development (R&D) efforts should be undertaken to convert HFC-23 into useful products.
3. New Annex F and Annex G shall be added to the Protocol following Annex E.
4. Nationally determined phase-down steps for HFCs in Article 5 Parties.
5. Continue to use HCFCs/HFCs and blends of HFCs as transitional substances for phase-out of HCFCs wherever low-GWP/zero-GWP alternatives are not available.
6. Full conversion costs be defined as below :
7. The total cost of converting a chemical production plant from HFC(s) to low-GWP/zero-GWP alternative(s) and/or manufacturing unit of equipment(s)/product(s) from HFCs to low-GWP/zero-GWP alternative(s) including capital costs, costs of Intellectual Property Rights, patents, technology transfer, research and development, in-house development, lost profit due to shutdown/closure of plant/manufacturing facility, change in structure design, layout of plant and machinery, civil, electrical and mechanical works etc.
8. Strengthening of financial mechanism and transfer of technology under the Montreal Protocol by addressing the following :
 - (a) Compensation for lost profit streams for gradual closure of production facilities of HFCs.
 - (b) "Full conversion costs":
 - i. Converting a production plant of HFC to low-GWP/zero-GWP alternative production plant.
 - ii. Converting a manufacturing unit of equipment(s)/product(s) from HFCs to low-GWP/ zero-GWP alternative(s) and operating costs at least for 5 years.
 - iii. Adequate funding for servicing sector including training of technicians, awareness, equipment support to technicians, compensation for obsolescence/immature retirement of equipment etc..
9. Full second conversion costs wherever transitional technologies shall be deployed.

10. The amendment shall supersede earlier decisions/agreements if any related to Annex F and Annex G substances between the Parties and the Executive Committee or any other related institutions under the Montreal Protocol.

11. A grace period of 15 years for Article 5 Parties to ensure availability of safe, technically proven, energy-efficient, environment friendly, economically viable, commercially available, matured non-HFC technologies.

12. The baselines for non-Article 5 Parties for production and consumption should be the average of 2013-2015 with freeze in 2016 and for Article 5 Parties should be the average of 2028-2030 with freeze in 2031 and phase-down with a flexible approach to reach the plateau of 15% of the baseline in 2035 and 2050 respectively. Phase-down steps for Article 5 Parties shall be decided 5 years in advance for the next 5 years period.

13. Date of freeze shall be the date of eligibility of enterprises for financial assistance in case of Article 5 Parties.

14. Prioritization of phase-down of Annex F substances recognizing that there are no alternatives for all HFC applications.

(a) Annex F substances shall be categorized in the following Groups:

(b) Annex F-Group I: (HFC-134, HFC-134a, HFC-143, HFC-245fa, HFC-365mfc)

(c) Annex F - Group II: (HFC-227ea, HFC-236cb, HFC-236ea, HFC-236fa, HFC-245ca, HFC-43-10mee)

(d) Annex F - Group III: (HFC-32, HFC-125, HFC-143a)

(e) Annex F - Group IV : (HFC-41, HFC-152, HFC-152a, HFC-161)

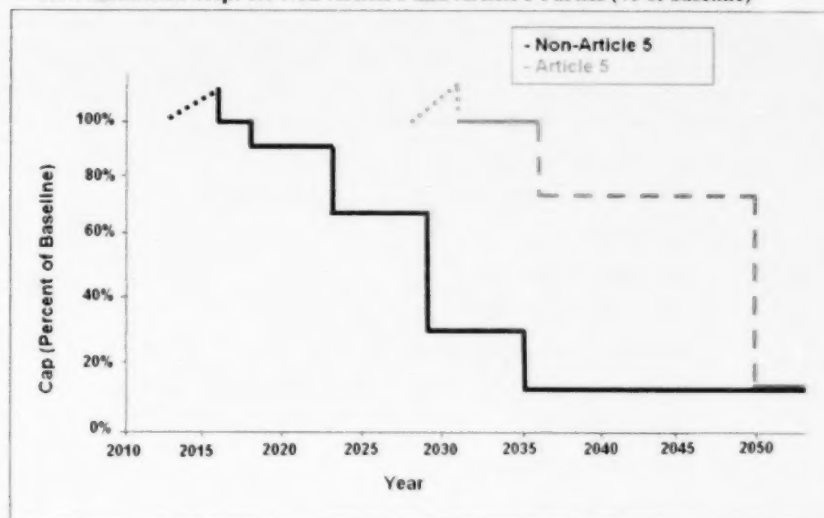
(f) Annex G substances : HFC-23 :-

(g) Phase-down of production and consumption of HFC-23, if any.

15. Emissions of HFC-23 and its by-production during production of HCFC-22 to be addressed on priority because of its high-GWP. Comprehensive R&D efforts should be undertaken to make use HFC-23 for converting it in a useful product(s).

16. Separate provisions for non-Article 5 and Article 5 Parties for phase-down of production and consumption of Annex F substances on group-wise prioritization on a GWP-weighted basis.

HFC Reduction Steps for Non-Article 5 and Article 5 Parties (% of baseline)



17. Use of GWP weighting for HFCs in the Montreal Protocol.

18. Exemption for production and consumption of HFCs for manufacturing of Metered Dose Inhalers (MDIs) and other medical applications.

19. Provision of Essential Use Nomination (EUN) both for non-Article 5 and Article 5 Parties.

20. No control on feedstock applications of HFCs.
21. Requirement of licensing of HFC imports and exports, and bans imports and exports to non-Parties.
22. Requirement of reporting of HFC production, import and export of HFCs.
23. Phase-down of production and consumption of HFCs shall be eligible for funding under the Montreal Protocol's Multilateral Fund.

3. Relationship to HCFC phase-out:

24. Recognizing that HFCs are alternatives to HCFCs for various applications and there are no low-GWP/zero-GWP non-HFC alternatives for all the applications, it is proposed to continue the use of HFCs and blends of HFCs as transitional substances for phase-out of HCFCs wherever low-GWP/zero-GWP alternatives are not available.

4. Relationship with the UNFCCC:

25. The proposal is intended to support overall global efforts aimed at climate system protection.
26. The proposal envisages continuance of inclusion of HFCs within the scope of the UNFCCC and its Kyoto Protocol for accounting and reporting of emissions.

Note: Above key elements shall form part of operating paragraphs of the decision on HFC amendment.

5. Text of Indian HFC phase-down amendment proposal

Article I: Amendment

A. Article 1, paragraph 4

In paragraph 4 of Article 1 of the Protocol, for the words:

"Annex C or Annex E"

there shall be substituted:

"Annex C, Annex E, Annex F or Annex G"

B. Article 1, paragraph 9

a new paragraph shall inserted after paragraph 8

9. "Full conversion costs" means the total cost of converting a chemical production plant from HFC(s) to low-GWP/zero-GWP alternative(s) and/or manufacturing unit of equipment(s)/product(s) from HFCs to low-GWP/zero-GWP alternative(s) including capital costs, costs of Intellectual Property Rights, patents, technology transfer, research and development, in-house development, lost profit due to shutdown/closure of plant/manufacturing facility, change in structure design, layout of plant and machinery, civil, electrical and mechanical works.

C. Article 2, paragraph 5

In paragraph 5 of Article 2 of the Protocol, for the words:

"and Article 2H"

there shall be substituted:

"Articles 2H, 2J and 2K"

D. Article 2, paragraphs 8(a) and 11

In paragraphs 8(a) and 11 of Article 2 of the Protocol, for the words:

"Articles 2A to 2I"

there shall be substituted:

"Articles 2A to 2K".

E. Article 2, paragraph 9

The "and" at the end of subparagraph 9(a)(i) of Article 2 of the Protocol shall be moved to the end of subparagraph 9(a)(ii).

The following subparagraph shall be inserted after subparagraph 9(a)(ii) of Article 2 of the Protocol:

"(iii) Adjustments to the global warming potentials specified in Annexes C, F and G should be made and, if so, what the adjustments should be;"

In paragraph 9(c) of Article 2 of the Protocol, the following language shall be inserted immediately after the words "In taking such decisions":

"under subparagraphs 9(a)(i) and (ii)";

For the final semi-colon of paragraph 9(c) of Article 2 of the Protocol there shall be substituted:

" . In taking such decisions under subparagraph 9(a)(iii), the Parties shall reach agreement by consensus only; "

F. Article 2J

The following Article shall be inserted after Article 2I of the Protocol:

"Article 2J: Hydrofluorocarbons

1. Each Party shall ensure that for the twelve-month period commencing on 1 January [2016], and in each 12-month period thereafter, its calculated level of consumption of the controlled substances in Annex F does not exceed, annually, [one hundred] per cent of the average of its calculated levels of consumption of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C, Group I controlled substances. Each Party producing one or more of these substances, shall, for the same period, ensure that its calculated level of production of the substances does not exceed annually [one hundred] per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by upto ten per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances.

1. Each Party shall ensure that for the twelve-month period commencing on 1 January [2018], and in each 12-month period thereafter, its calculated level of consumption of the controlled substances in Annex F does not exceed, annually, [ninety] per cent of the average of its calculated levels of consumption of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C, Group I controlled substances. Each Party producing one or more of these substances, shall, for the same period, ensure that its calculated level of production of the substances does not exceed annually [ninety] per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by upto ten per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances.

2. Each Party shall ensure that for the twelve-month period commencing on 1 January [2023], and in each 12-month period thereafter, its calculated level of consumption of the controlled substances in Annex F does not exceed, annually, [sixty five] per cent of the average of its calculated levels of consumption of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C, Group I controlled substances. Each Party producing one or more of these substances, shall, for the same period, ensure that its calculated level of production of the substances does not exceed annually [sixty five] per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by upto ten per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances.

3. Each Party shall ensure that for the twelve-month period commencing on 1 January [2029], and in each 12-month period thereafter, its calculated level of consumption of the controlled substances in Annex F does not exceed, annually, [thirty] per cent of the average of its calculated

levels of consumption of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C, Group I controlled substances. Each Party producing one or more of these substances, shall, for the same period, ensure that its calculated level of production of the substances does not exceed annually [thirty] per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances.

4. Each Party shall ensure that for the twelve-month period commencing on 1 January [2035], and in each 12-month period thereafter, its calculated level of consumption of the controlled substances in Annex F does not exceed, annually, [fifteen] per cent of the average of its calculated levels of consumption of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C, Group I controlled substances. Each Party producing one or more of these substances, shall, for the same period, ensure that its calculated level of production of the substances does not exceed annually [fifteen] per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of the average of its calculated level of production of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C Group I controlled substances.

G. Article 2K

The following Article shall be inserted after Article 2J:

"Article 2K: Other Hydrofluorocarbons

Annex G substances generated as a by-product in facilities that produce Annex C, Group I or Annex F substances shall not be controlled under the Montreal Protocol."

H. Article 3

The preamble to Article 3 of the Protocol should be replaced with the following:

"I. Except as specified in paragraph 2, for the purposes of Articles 2, 2A to 2K and 5, each Party shall, for each group of substances in Annex A, Annex B, Annex C, Annex E or Annex F determine its calculated levels of:"

For the period at the end of subparagraph (c) of Article 3 of the Protocol there shall be substituted a semi-colon, and the "and" at the end of subparagraph (b) of Article 3 of the Protocol shall be moved to the end of subparagraph (c).

The following text should be added to the end of Article 3 of the Protocol:

"2. When calculating average levels of production, consumption, imports, exports and emissions of Annex F, Annex G and Annex C Group I substances for purposes of Article 2J and 2K, each Party shall use the global warming potential of these substances as specified in Annexes C, F and G."

I. Article 4, paragraph 1 sept

The following paragraph shall be inserted after paragraph 1 sex of Article 4 of the Protocol:

"1 sept. Within one year of the date of entry into force of this paragraph, each Party shall ban the import of the controlled substances in Annex F and G from any State not party to this Protocol."

J. Article 4, paragraph 2 sept

The following paragraph shall be inserted after paragraph 2 sex of Article 4 of the Protocol:

"2 sept. Within one year of the date of entry into force of this paragraph, each Party shall ban the export of the controlled substances in Annex F and G to any State not party to this Protocol."

K. Article 4, paragraphs 5, 6 and 7

In paragraphs 5, 6 and 7 of Article 4 of the Protocol, for the words:

"Annexes A, B, C and E",

there shall be substituted:

"Annexes A, B, C, E, F and G".

L. Article 4, paragraph 8

In paragraph 8 of Article 4 of the Protocol, for the words:

"Articles 2A to 2I"

there shall be substituted:

"Articles 2A to 2K".

M. Article 4B

The following paragraph shall be inserted after paragraph 2 of Article 4B of the Protocol:

"2 bis. Each Party shall, by 1 January, [2016] or within three months of the date of entry into force of this paragraph for it, whichever is later, establish and implement a system for licensing the import and export of new, used, recycled and reclaimed controlled substances in Annex F and G. Any Party operating under paragraph 1 of Article 5 that decides it is not in a position to establish and implement such a system by 1 January, [2016] may delay taking those actions until 1 January, [2031]."

N. Article 5, paragraph 4

In paragraph 4 of Article 5 of the Protocol, for the words:

"Articles 2A to 2I"

there shall be substituted:

"Articles 2A to 2K".

O. Article 5, paragraphs 5 and 6

In paragraphs 5 and 6 of Article 5 of the Protocol, for the words:

"Article 2I"

there shall be substituted:

"Articles 2I, 2J and 2K".

P. Article 5, paragraph 8 qua

The following paragraph shall be inserted after paragraph 8 ter of Article 5 of the Protocol:

"8 qua. Each Party operating under paragraph 1 of this Article shall:

- (a) in order to meet its basic domestic needs, be entitled to delay its compliance with the control measures set out in each of paragraphs 1, 2, and 3 of Article 2J for [fifteen] years, subject to any adjustments made to the control measures in Article 2J in accordance with Article 2(9);
- (b) for purposes of calculating its consumption baseline under Article 2J, use the average of its calculated levels of consumption of Annex F controlled substances in the years 2028, 2029 and 2030 plus thirty two and half percent of the baseline of Annex C, Group I substances, instead of the average of its calculated levels of consumption of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C, Group I controlled substances;
- (c) for purposes of calculating its production baseline under Article 2J, use the average of its calculated levels of production of Annex F controlled substances in the years 2028, 2029 and 2030 plus thirty two and half percent of the baseline of Annex C, Group I substances, instead of the average of its calculated levels of consumption of Annex F controlled substances for the years 2013, 2014 and 2015 plus twenty five per cent of the baseline of Annex C, Group I controlled substances;
- (d) ensure that its calculated level of consumption and production:
 - (i) for purposes of paragraph 1 of Article 2J does not exceed, annually, [one hundred] per cent, of the average of its calculated levels of consumption and production, respectively, of Annex F controlled substances for the years 2028, 2029 and 2030 plus thirty two and half percent of the baseline of Annex C, Group I controlled substances;
 - (ii) for purposes of paragraph 5 of Article 2J, each party shall ensure that for the twelve months period commencing on 1 January [2050] and in each twelve months period thereafter, its

calculated levels of consumption and production, respectively of the controlled substances in Annex F, does not exceed, annually, [fifteen] per cent. of the baseline;

(iii) for purposes of paragraphs 2, 3 and 4 of Article 2J, phase-down steps for production and consumption respectively, from freeze on 1 January, [2031] to plateau of [fifteen] percent on 1 January, [2050] shall be decided 5 years in advance for the next 5 years period.

Q. Article 6

In Article 6 of the Protocol, for the words:

"Articles 2A to 2I"

there shall be substituted:

"Articles 2A to 2K".

R. Article 7, paragraphs 2, 3 and 3 ter

The following lines shall be inserted after the line that reads "— in Annex E, for the year 1991," in paragraph 2 of Article 7 of the Protocol:

"— in Annex E, for the years 2013, 2014 and 2015

— in Annex C, for the years 2013, 2014, and 2018"

In paragraphs 2 and 3 of Article 7 of the Protocol, for the words:

"C and E"

there shall be substituted:

"C, E, F and G".

S. Article 10, paragraph 1

The following paragraph shall be inserted after paragraph 1 of Article 10 of the Protocol:

1 bis. The Parties shall strengthen the financial mechanism for providing financial and technical cooperation, including transfer of technologies to Parties operating under paragraph 1 of Article 5 of this Protocol to enable their compliance with control measures set out in Article 2J, Article 2K and paragraph 8 qua Article 5 of the Protocol for the Annex F and Annex G substances. The financial mechanism shall meet compensation for lost profit stream for gradual closure of production facilities of HFCs, "Full costs of conversion" to HFC production facilities, manufacturing unit of equipment (s)/product(s) from HFCs to low-GWP/zero-GWP alternative (s), operating costs for at least 5 years and adequate funding for servicing sector including training of technicians, awareness, equipment support to technicians, compensation for obsolescence/ immature retirement of equipment, etc.

T. Article 10A

After the paragraph (b), a new paragraph (c) shall be inserted:

(c) Protocol shall ensure that the transfer of technology including technologies with Intellectual Property Rights, process and application patents to Parties operating under paragraph 1 of Article 5 of the Protocol for phase down of Annex F and Annex G substances both for production and consumption.

U. Annex C and Annex F

Annex C, Group I is amended to add the 100-year Global Warming Potential for the following substances:

Substance	100 year Global Warming Potential *
HCFC-21	148
HCFC-22	1,760
HCFC-123	79
HCFC-124	527
HCFC-141b	782
HCFC-142b	1,980
HCFC-225ca	127
HCFC-225cb	525

Annexes F and G shall be added to the Protocol, following Annex E. It shall read:

Annex F: Controlled Substances

Substance	100 year Global Warming Potential*
Group I (HFC-134, HFC-134a, HFC-143, HFC-245fa, HFC-365mfc)	
HFC-134 1120	
HFC-134a	1300
HFC-143 328	
HFC-245fa	858
HFC-365mfc	804
Group II: (HFC-227ea, HFC-236cb, HFC-236ea, HFC-236fa, HFC-245ea, HFC-43-10mee)	
HFC-227ea	3350
HFC-236cb	1210
HFC-236ea	1330
HFC-236fa	8060
HFC-245ea	716
HFC-43-10mee	1650
Group III: (HFC-32, HFC-125, HFC-143a)	
HFC-32	677
HFC-125 3170	
HFC-143a	4800
Group IV: (HFC-41, HFC-152, HFC-152a, HFC-161)	
HFC-41	116
HFC-152 16	
HFC-152a	138
HFC-161 4	

Annex G: Controlled Substances

Substance	100 year Global Warming Potential*
Group I (HFC-23)	
HFC-23	12400

* Source: Scientific Assessment of Ozone Depletion (2014)

Article II: Relationship to the 1999 Amendment

No State or regional economic integration organization may deposit an instrument of ratification, acceptance or approval of or accession to this Amendment unless it has previously, or simultaneously, deposited such an instrument to the Amendment adopted at the Eleventh Meeting of the Parties in Beijing, 3 December 1999.

Article III: Relationship to the United Nations Framework Convention on Climate Change and Its Kyoto Protocol

This Amendment is not intended to have the effect of excepting HFCs from the scope of the commitments contained in Articles 4 and 12 of the United Nations Framework Convention on Climate Change and in Articles 2, 5, 7 and 10 of its Kyoto Protocol that apply to "greenhouse gases not controlled by the Montreal Protocol." Each party to this Amendment shall continue to apply the principles and provisions of the United Nations Framework Convention on Climate Change and its Kyoto Protocol identified above to HFCs as long as those principles and provisions, respectively remain in force with respect to such Party.

Accordingly, United Nations Framework Convention on Climate Change and Kyoto Protocol need to be amended.

Article IV: Entry into force

1. Except as noted in paragraph 2, below, this Amendment shall enter into force on 1 January [20xx], provided that at least twenty instruments of ratification, acceptance or approval of the Amendment have been deposited by States or regional economic integration organizations that are Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer. In the event that this condition has not been fulfilled by that date, the Amendment shall enter into force on the ninetieth day following the date on which it has been fulfilled.

2. The changes in Sections II and I of Article I of this Amendment shall enter into force on 1 January [20xx], provided that at least seventy instruments of ratification, acceptance or approval of the Amendment have been deposited by States or regional economic integration organizations that are Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer. In the event that this condition has not been fulfilled by that date, the Amendment shall enter into force on the ninetieth day following the date on which it has been fulfilled.

3. For purposes of paragraphs 1 and 2, any such instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of such organization.

4. After the entry into force of this Amendment, as provided under paragraphs 1 and 2, it shall enter into force for any other Party to the Protocol on the ninetieth day following the date of deposit of its instrument of ratification, acceptance or approval.